

21493

S/020/61/137/004/017/031
B104/B206

Cosmic radiation flares from...

hard component of cosmic radiation. The energy spectrum of the drop is satisfactorily described by Eqs.

$$\frac{\delta D(\varepsilon)}{D(\varepsilon)} = -f \begin{cases} 1, & \text{если } \varepsilon < \varepsilon_1/4; \\ \frac{2}{\pi} \arcsin(\varepsilon_1/2\varepsilon - 1), & \text{если } \varepsilon_1/4 < \varepsilon < \varepsilon_1/2; \\ 0, & \text{если } \varepsilon > \varepsilon_1/2. \end{cases} \quad (2)$$

$\varepsilon_1 = 130 - 170$ Bev. A second and third flare of the hard component of cosmic radiation was also observed, the third being described as Delling effect. The coincidence of the start of the magnetic storm and the first flare convinces the authors that the initial particle flare was a corpuscular flow which then triggered off the magnetic storm. The velocity of the corpuscular flow is given as $3 \cdot 10^8$ cm/sec. If it is assumed that the reduction of the Forbush type is caused by the regular magnetic field, it can be concluded from the delay of this effect compared with the start of the magnetic storm that the magnetic field was strongly disturbed in the front part of the flow. It is possible that the particle flow reached there an energy comparable with the energy density of the magnetic field. The relatively small second reduction of the intensity of the hard

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Cosmic radiation flares from...

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component of cosmic radiation and the absence of a neutron-component reduction points towards the existence of accelerated particles in the particle flow. Amplitudes and time of the maximum of the daily disturbances agree with the velocity of the particle flow and the direction of the magnetic field in the flow (opposite to that of the earth). The authors come to the conclusion that the ejection of the particle flow was caused by solar cosmic rays, which partly produced the flares on the earth and was partly captured by the particle flow. Particles of up to 7 Bev were captured thereby. For a free incidence of the particles of the second flare on the earth, it was necessary that the direction of the magnetic field of the first flow coincided with the axis of this flow. There are 2 figures and 3 Soviet-bloc references.

ASSOCIATION: Laboratoriya fizicheskikh problem Yakutskogo filiala Sibirskogo otdeleniya Akademii nauk SSSR (Laboratory for Problems of Physics of the Yakutsk Branch of the Siberian Department, AS USSR) ix

PRESENTED: December 16, 1960, by M. A. Lavrent'yev, Academician

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S/020/61/137/004/017/031
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Cosmic radiation flares from...

SUBMITTED: December 13, 1960

Legend to Fig. 1: Two-hourly values of the cosmic radiation according to data from the Yakutsk recording devices from November 10 to 12. H.M. are measured values of a neutron monitor, I_1 and I_2 those of ionization chambers, the $T(B)$, $T^{39}(W)$ and $T^{30}(C)$ are the measurement results of counter tube telescopes, which were directed vertically and at an angle of 30° towards south (W) and north (C). The lower indices 0, 7, 20 and 60 denote the recording depth in meters water equivalent. The statistical error is given at the far right side.

Card 4/8

KUZ'MIN, A.I.; SHAHER, G.V.; RYMSKIY, G.F.; SHAHER, Yu.G.

Cosmic ray flares during Nov. 12-15, 1960. Geomag. i aer. 1
no.4:510-522 JI-Ag '61. (MIRA 14:12)

1. Sibirskoye otdeleniye AN SSSR, Yakutskiy filial.
(Cosmic rays)

4
S/058/62/000/006/018/136
A061/A101

AUTHORS: Kuz'min, A. I., Yefimov, N. N., ~~Krasil'nikov, D. D.~~, Skripin, G. V.,
Sokolov, V. D., Shafer, G. V., Shafer, Yu. G.

TITLE: A study of the variations with time of different cosmic ray components by one-point observations

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 53, abstract 6B371
(In collection: "Kosmicheskiye luchy", no. 3, Moscow, AN SSSR, 1961,
64 - 79, English summary)

TEXT: A recording apparatus of the Yakutsk cosmic radiation post is described, and the principal results of a study on variations of intensity are presented. The following instruments are laid out on the surface of the Earth: a neutron monitor, two shielded ionization chambers, and counter telescopes recording vertical and oblique cosmic ray components. In addition, counter telescopes placed at depths of 7.20 and 60 m water equivalent record the muonic component in the energy range of $2 \cdot 10^9 \div 10^{11}$ ev, while the continuous frequency recording on latitudinal atmospheric showers yields information on $5 \cdot 10^{13} \div 10^{16}$.

Card 1/2

A study of the...

S/058/62/000/006/018/136
A061/A101

ev particles. The values of the barometric coefficient of different components are indicated, as well as the principal results of an investigation of 27-day and solar day variations of intensity. Phenomena observed during magnetic storms are briefly described. The interrelation factors between variations of intensity of primary and secondary cosmic ray components up to energies of ~ 700 Bev are determined. These factors are utilized for the analysis of some types of variations of intensity.

N. Kaminer

[Abstracter's note: Complete translation]

Card 2/2

S/048/62/026/006/016/020
B125/B102

AUTHORS: Kuz'min, A. I., Krymskiy, G. F., Skripin, G. V., Chirkov,
N. P., Shafer, G. V., and Shafer, Yu. G.

TITLE: Some results of investigations relating to variations of
cosmic rays

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26,
no. 6, 1962, 808-817

TEXT: The main results gained in the Yakutskaya laboratoriya (Yakutsk
Laboratory) concerning various meteorological effects and primary
variations are here reviewed, covering papers published by Kuz'min et al.
in Tr. Yakutskogo filiala AN SSSR. Ser. fiz., no. 5, 1962. There are
12 figures and 1 table.

ASSOCIATION: Yakutskiy filial Sibirskogo otdeleniya Akademii nauk SSSR,
Laboratoriya fizicheskikh problem (Yakutsk Branch of the
Siberian Department of the Academy of Sciences USSR,
Laboratory of Physical Problems)

Card 1/1

S/203/62/002/004/016/018
IO46/I242

96150

AUTHORS:

Kapustin, I.M., Starodubtsev, A.M. and Shafer, G.V.

TITLE:

Circuit diagram for a transistorized neutron monitor

PERIODICAL:

Geomagnetizm i aeronomiya, v.2, no.4, 1962, 777-781

TEXT: The transistorized circuit for neutron monitors is free from the basic faults of vacuum-tube circuits. By increasing the high voltage on the counters to 2200-2400 V (as compared to 1600 - 1800 V for conventional monitors), the amplification factor of the circuit is reduced to 500-1000 (as compared with $\sim 10^4$ in vacuum-tube circuits) and the latter becomes considerably less sensitive to noise. Since no frequent replacement of components is required, the amplification factor of the transistorized circuit is much more stable than that of the vacuum-tube circuit. The device is designed to operate on 110 to 120 V; when disconnected from the mains, the circuit switches over automatically to a 12 V battery. There are 10 figures.

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KUZ'MIN, A.I.; KRYMSKIY, G.F.; SKRIPIN, G.V.; CHIRKOV, N.P.; SHAFER, G.V.;
SHAFER, Yu.G.

Some results of studies of cosmic-ray variations. Izv. AN SSSR.
Ser. fiz. 26 no.6:808-817 Je '62. (MIRA 15:6)

1. Yakutskiy filial Sibirskogo otdeleniya Akademii nauk SSSR,
Laboratoriya fizicheskikh problem.
(Cosmic rays)

CHIRKOV, N.P.; FILIPPOV, V.A.; SHAFFER, G.V.

Eleven-year variations on cosmic ray intensity. Trudy
IAFAN SSSR. Ser. fiz. no.4:122-131 '62. (MIRA 15:12)
(Cosmic rays)
(Sun spots)

KUZ'MIN, A.I.; KUKLIN, G.V.; SERGEYEV, A.V.; SKRIPIN, G.V.; CHIRKOV, N.P.;
SHAFFER, G.V.

Flare-up of cosmic ray intensity on May 4, 1960. Trudy
IAFAN SSSR. Ser. fiz. no.4:132-137 '62. (MIRA 15:12)
(Cosmic rays)

SKRIPIN, G.V.; SHAFFER, G.V.

Some cases of a decrease in cosmic ray intensity. Trudy
IAFAN SSSR. Ser. fiz. no.4:158-162 '62. (MIRA 15:12)
(Cosmic rays)

KAPUSTIN, I.N.; STARODUBTSEV, A.M.; ~~SHAFTER~~, G.V.

Radio circuit of a transistorized neutron monitor. Geomag. i aer. 2
no.4:777-781 J1-Ag '62. (MIRA 15:10)

1. Laboratoriya fizicheskikh problem Yakutskogo filiala Sibirskogo
Otdeleniya AN SSSR.
(Neutrons) (Radiation—Measurement)

KUZ'MIN, A.I.; SHAFER, G.V.; SHAFER, Yu.G.; KRASIL'NIKOV, D.D.;
KRYMSKIY, G.F.; MAMRUKOV, A.P.; SMIRNOV, N.S.; YARIN, V.I.

July 1959 according to data of comprehensive geophysical
observations at Yakutsk. Trudy IAFAN SSSR. Ser. fiz. no.4:142-156
'62. (MIRA 15:12)

(Magnetic storms)
(Cosmic rays)

L 32219-65 EWT(1)/FCC/EWG(v)/EEC(t)/EEC-4/EWA(h) Po-4/Pq-4/Pe-5/Fae-2/Peb/
 P1-4 GS/GW/WS-2

ACCESSION NR: AT5006965

S/0000/64/000/000/0037/0041

AUTHOR: Krymskiy, G. F.; Kuz'min, A. I.; Shafer, G. V.

TITLE: The 27-day period of variation in cosmic ray intensity

SOURCE: AN SSSR. Yakutskiy filial. Institut kosmofizicheskikh issledovaniy i
 aeronomii. Geo- i geliograficheskiye efekty v kosmicheskikh luchakh i polarnykh
 siyaniyakh (Geo- and heliophysical effects in cosmic rays and auroras). Moscow,
 Izd-vo Nauka, 1964, 37-41

TOPIC TAGS: cosmic ray, meteorological element, pressure level, magnetic storm,
 cosmic ray intensity

ABSTRACT: The 27-day period of variation in the intensity of cosmic rays was inves-
 tigated by the Laboratory of Physical Problems of the Yakutsk Branch, Academy of
 Sciences USSR. Meteorological elements in the lower layers of the atmosphere, from
 the earth's surface to the 50-mbar level, were taken into consideration. Investiga-
 tion results were represented graphically; the graphs indicate that the period is
 28.8 days for maximum values, but in 1959-1960, days with maximum values formed two
 periods of 26.7 and 28.5 days. The distribution of days with minimum intensity
 agrees approximately with that of maximum intensity. Days with minimum intensity

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L 32219-65

ACCESSION NR: AT5006965

were associated with effective magnetic storms. The 27-day variation period is considered to be a stable feature. Some deflections from the normal distribution may be caused by magnetic storms. It was concluded that variations in cosmic ray intensity had a regular component in 1958-1960 with a period of 28.8 days, and from May 1959, two periods appeared with 28.5 and 26.7 days. Orig. art. has: 3 figures [EG]
1 formula and 2 tables

ASSOCIATION: none

SUBMITTED: 230et64

ENCL: 00

SUB CODE: AA

NO REF SOV: 010

OTHER: 000

ATD PRESS: 3203

Card 2/2

23401-65 ENT(1)/ENG(v)/FCC/EEC-1/EEC(t)/ENA(h) Po-1/Pe-5/Pq-1/Pae-2/Peb/Pi-1
ACCESSION NR: AP5002101 GW/WS S/0048/64/028/012/1997/2000

AUTHOR: Kuz'min, A. I.; Krymekiy, G. P.; Krivoschapkin, P. A.;
Skrupin, G. V.; Chirkov, N. P.; Shafer, G. V.

TITLE: Modulation of cosmic rays by an interplanetary magnetic field

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 12, 1964, 1997-2000

TOPIC TAGS: cosmic ray flux, chromospheric flare, magnetic field, terrestrial orbit, solar particle, Forbush decrease, galactic cosmic ray, exponential function, interplanetary magnetic field

ABSTRACT: The flux of cosmic rays depends upon the state of chromospheric flares. A reflecting magnetic field can exist inside or outside the terrestrial orbit; this field does not restrict the motion of solar particles. The occurrence of cosmic rays during various phases of Forbush decreases indicates that solar cosmic rays can reach the earth freely. The Forbush effect is evident in a space which is separated from other space by an envelope. In this segre-

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23401-65
ACCESSION NR: AP5002101

gated space, solar cosmic rays may move away from or toward the sun. This segregated space is characterized by a decrease of galactic cosmic rays. The energy spectrum of particle variations with an energy of more than 7 Bev is characterized by an exponential function with an exponent of -0.5 to -1.5 . Variations with a maximum exponent are associated with the 11-year solar activity cycle. The degree of variation is greater in the polar regions than at middle latitudes. The delay in the Forbush decrease on the earth as compared with the solar chromospheric flares obtained by experiments indicates an expansion of the magnetic shell of the segregated space with a velocity of 10^8 cm sec^{-1} . This expansion may be identified with the motion of the radial interplanetary magnetic field. The intensity of galactic cosmic rays is less in the vicinity of the solar system than in the free flux in the galaxy. An intensity gradient of cosmic rays must exist at the boundary between the solar system and the unperturbed galaxy. Orig. art. has: 1 figure, 1 table, and 4 formulas. [EG]

ASSOCIATION: Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala Sibirekogo otdeleniya Akademii nauk SSSR

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L 23401-65
ACCESSION NR: AP5002101

(Institute of Space Physics Research and Aeronomy of the Yakutsk
Branch of Siberian Division, Academy of Sciences, SSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: AA

NO REF SOV: 008

OTHER: 004

Card 3/3

L 23400-65 EWT(1)/EWG(v)/FCG/EEC-1/EEC(t)/EWA(h) Po-4/Pa-5/Pq-4/Pae-2/Peb/Pi-4
ACCESSION NR: AP5002103 GW/WS S/0048/64/028/012/2012/2015

AUTHOR: Krymskiy, G. F.; Kuz'min, A. I.; Shafer, G. V.

TITLE: Forbush effect and disturbances of the interplanetary magnetic field

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 12, 1964, 2012-2015

TOPIC TAGS: Forbush decrease, cosmic ray intensity, transition layer, incident flux, transparency function, particle energy, magnetic field intensity, solar activity cycle

ABSTRACT: A "transition layer" creates a segregated space for the Forbush decrease in the intensity of cosmic rays. This space includes the earth and the sun. The transition layer can be considered as an envelope able to reflect cosmic rays. An attempt has been made to use experimental data on the Forbush effect to learn the dependence of the envelope transparency upon the energy of the cosmic rays. The transparency is described by the ratio of the flux passing

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L 23400-65

ACCESSION NR: AP5002103

through the envelope to the incident flux of the cosmic rays. Formulas are developed for determining the transparency as a function of impulses. The transparency depends upon the particle energy according to the exponential law, and the exponent of the function is equal to -0.8. The intensity of the magnetic field is found, using the exponential function, to be equal to 25γ. The changes in the intensity of the cosmic rays and its restoration depend upon the physical conditions found in the interplanetary space, the solar activity cycle, and other shorter periods of variation. Orig. art. has: 2 figures and 8 formulas. [EG]

ASSOCIATION: Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Space Physics Research and Aeronomy of the Yakutsk Branch of the Siberian Division, Academy of Sciences, SSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: AA

NO REF SOV: 003

OTHER: 005

Card 2/2

L 39974-65 EWG(j)/EWT(m)/FCC/T IJP(c) GS
 ACCESSION NR: AT5006962 S/0000/64/000/000/0011/0020

AUTHOR: Filippov, V. A.; Shafer, G. V.

TITLE: Spatial-temporal characteristics of Forbush decreases in the neutron component

SOURCE: AN SSSR. Yakutskiy filial. Institut kosmofizicheskikh issledovaniy i aeronomii. Geo- i geliograficheskiye efekty v kosmicheskikh luchakh i polyarnykh siyaniyakh (Geo- and heliophysical effects in cosmic rays and auroras). Moscow Izd-vo Nauka, 1964, 11-20

TOPIC TAGS: cosmic ray, Forbush decrease, cosmic ray variation, cosmic ray, neutron component

ABSTRACT: A study has been made of the mean latitude dependence of Forbush decreases. Data on the cosmic ray neutron component for 37 stations in the world network were used in the study, and mean amplitudes for 13 storms were determined. The data were normalized to the effect at Ottawa because data for all cases were available for that station. Fig. 1 of the Enclosure shows the dependence of the mean amplitude of Forbush decreases on geomagnetic latitude. It is shown that there is a plateau beginning with latitude $\lambda \sim 60^\circ$. The latitude effect is approximately

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ACCESSION NR: AT5006962

50%. If a study is made of the dependence of amplitude on the cutoff energy, the observed plateau in the latitude effect curve can be related to a primary particle of energy less than approximately 1 Bev. The necessary formulas for determining the energy spectrum of Forbush decreases are presented. It is shown that the spectrum of variations of primary particles in the region of energies up to 15 Bev which were subjected to the effect at the time of magnetic storms can be represented in the form $\frac{\delta D(\epsilon)}{D(\epsilon)} = -a\epsilon^{-\alpha}$, where $a = 0.46 \pm 0.06$; $\alpha = 0.8 \pm 0.2$, if $2.5 - 3.5 < \epsilon < 15$ Bev. The shape of the spectrum in the region of energies less than 2.5 Bev remains unclear because cosmic ray measurements in the stratosphere were not made. The determined spectrum does not contradict the following:

$$\frac{\delta D(\epsilon)}{D(\epsilon)} = -a \begin{cases} 1, & \text{if } \epsilon < \epsilon_0, \\ \left(\frac{\epsilon_0}{\epsilon}\right)^\alpha, & \text{if } \epsilon \geq \epsilon_0. \end{cases}$$

where $\alpha = -0.8 \pm 0.2$; $a = 0.23 \pm 0.06$ and $\epsilon_0 = 2.5 - 3.5$ Bev. Fig. 2 of the Enclosure shows the dependence of the amplitudes of Forbush decreases on the energy of primary particles. The study reveals that Forbush decreases show a latitude dependence of the same sign as the ordinary cosmic ray latitude effect. The characteristic distribution of the commencement of Forbush decreases indicates

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L 39974-65

ACCESSION NR: AT5006962

a dependence on the time of the commencement at the Greenwich meridian. In the case of daytime commencements the decrease begins earlier at the stations of the eastern hemisphere; in the case of night time commencements -- at the stations of the western hemisphere. The distribution of the values of Forbush decreases over the earth's surface reveals greater gradients in the western hemisphere than in the eastern hemisphere. Orig. art. has: 6 formulas, 5 figures and 3 tables.

ASSOCIATION: Institut kosmofizicheskikh issledovaniy i aeronomii, Yakutskiy filial, AN SSSR (Institute of Space Research and Aeronomy, Yakutsk Branch, AN SSSR)

SUBMITTED: 23Oct64

ENCL: 03

SUB CODE: ES

NO REF SOV: 008

OTHER: 002

Card 3/6

KUZNETS, A.I.; KRYMSKIY, G.F.; KRIVOSHAMEN, P.A.; SKRIPIN, G.V.;
CHIRKOV, E.P.; SHAFER, G.V.

Cosmic ray modulation by the interplanetary magnetic field.
Izv. AN SSSR Ser. fiz. 28 no.12:1997-2000 D '64 (MIRA 18:2)

1. Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo
filiala Sibirskogo otdeleniya AN SSSR.

L 6953-66 EWT(1)/FCC/EWA(h) CW
ACC NR: AP 5026232

SOURCE CODE: UR/0048/65/029/010/1891/1893

AUTHOR: Krymskiy, G.F.; Shafer, G.V.

ORG: none

TITLE: Relation between Forbush effects and solar flares /Report, All-Union Conference on Cosmic Ray Physics held at Apatity, 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya. v. 29, no.10, 1965, 1891-1893

TOPIC TAGS: Solar flare, cosmic ray effect, cosmic ray intensity, statistic analysis

ABSTRACT: The distributions in time and heliographic longitude of solar flares of importance 2 or higher during the 4 days preceding and the 2.5 days following the onsets of Forbush decreases were compared with theoretical distributions based on the assumption that the flares which are not associated with the Forbush effect are uniformly distributed. Best agreement was obtained with the distribution calculated on the assumption that the probability for a flare to produce a Forbush decrease is proportional to the seventh power of the cosine of its heliographic longitude and that the Forbush decrease is delayed by from one to two days. The effective width of the disturbed region of interplanetary space responsible for Forbush effects is estimated to be approximately 60° . The fact that other investigators have

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L 6953-66

ACC NR: AP 5026232

arrived at larger estimates of this width may be due to incorrect assignments of flares to specific Forbush effects. The delay between the onset of a Forbush decrease and the appearance of the flare that causes it appears to be greater for flares in the eastern hemisphere than for flares in the western hemisphere. The magnitude of a Forbush decrease depends strongly on the heliographic latitude of the flare that causes it when the flare is in the southern hemisphere, but not when the flare is in the northern hemisphere. There are two maxima during the year (in the Spring and the Fall) in the distribution of flares associated with Forbush decreases; this suggests that the angular width in the meridian plane of the disturbed region in interplanetary space is small. A relation was detected between the magnitude of a Forbush decrease and its delay after the appearance of the flare responsible for it, the larger decreases having the smaller delays.

The authors thank A.I.Kuz'min for valuable advice. Orig. art. has: 4 formulas, 3 figures and 1 table.

SUB CODE: AA

SUBM DATE: 00/--Oct65

ORIG. REF: 002 OTH REF: 002

Card 2/2 *ndo*

L 04889-67 EWT(1)/FCC GD/GW

ACC NR: AT6027219

SOURCE CODE: UR/0000/66/000/000/0102/0104

AUTHOR: Shafer, G. V.

ORG: none

TITLE: Instrument effects in ionization chambers for continuous recording of cosmic rays

SOURCE: AN SSSR. Sibirskoye otdeleniye. Sibirskiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln. Issledovaniya po geomagnetizmu i aeronomii (Studies in geomagnetism and aeronomy). Moscow Izd-vo Nauka, 1966, 102-104

TOPIC TAGS: cosmic ray measurement, ionization chamber, radiation instrument/5-2
ionization chamber, ASK-2 ionization chamber

ABSTRACT: The author discusses the instrument effect in the S-2 ionization chamber used in Yakutsk from 1949 to 1963 for the continuous recording of long-period cosmic ray variations and for the study of the variations of Forbush effects, and diurnal, 27-day, and other variations. The chamber has a capacity of 20 liters and is filled with cp argon at a pressure of 50 atm. Beginning with 1959, the C-2 exhibited a decrease in current difference that reached as much as 35% toward the end of 1962. This effect is shown to be caused by a decrease in current in the principal chamber. Gas leakage, which might have caused the change in current in

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L 04889-67

ACC NR: AT6027219

the principal chamber, was not detected. The investigation revealed, however, the absence of saturation current in the chamber, which is attributed to contamination of argon by oxygen. This contamination leads to the formation of heavy negative ions and (due to their low mobility) to recombination of the argon ions. Contamination of argon by oxygen is also seen to be the cause for the disintegration of the uranium samples in ASK-2 type ionization chambers observed at the Irkutsk and Sverdlovsk stations between 1953 and 1955. Orig. art. has: 2 figures.

SUB CODE: 18/ SUBM DATE: 25Dec65/ ORIG REF: 005/ OTH REF: 001

Card 2/2

egp

L 45143-66 EWT(1)/FCC GW

ACC NR: AR6027538

SOURCE CODE: UR/0313/66/000/005/0043/0043 /

AUTHOR: Kuz'min, A. I.; Krymskiy, G. F.; Krivoshapkin, P. A.; Skripin, G. V.;
Chirkov, N. P.; Shafer, G. V. 52
B

TITLE: The nature of cosmic ray variations

SOURCE: Ref. zh. Issledovaniye kosmicheskogo prostranstva, Abs. 5.62.292

REF SOURCE: Sb. Issled. po geomagnetizmu i aeron. M., Nauka, 1966, 111-118

TOPIC TAGS: cosmic ray, cosmic ray variation, magnetic field, interplanetary magnetic field, magnetosphere

ABSTRACT: A review of studies is presented on cosmic ray variations caused by changes in the magnetosphere, the temperature of the upper atmosphere, modulation effects, and flare effects. The role of the interplanetary magnetic field in the generation of cosmic ray variations is emphasized and the characteristics of the field are evaluated. [Translation of abstract] [FM]

SUB CODE: 03, 04/ SUBM DATE: none/

Card

1/1 *all*

L 04886-67 EWT(1)/EWT(π)/FCC IJF(2) GD/GW

ACC NR: AT6027221

SOURCE CODE: UR/0000/66/000/000/0111/0118

AUTHOR: Kuz'min, A. I.; Krymskiy, G. F.; Krivoschapkin, P. A.; Skripin, G. V.;
Chirkov, N. P.; Shafer, G. V.

51
B+1

ORG: none

TITLE: The nature of cosmic ray variations

SOURCE: AN SSSR. Sibirskoye otdeleniye, Sibirskiy institut zemnogo magnetizma, ionosfery
i rasprostraneniya radiovoln. Issledovaniya po geomagnetizmu i aeronomii (Studies in
geomagnetism and aeronomy). Moscow, Izd-vo Nauka, 1966, 111-118

TOPIC TAGS: cosmic ray intensity, solar cycle, magnetic field

ABSTRACT: A brief survey is given of available data concerning the variation of cosmic ray
intensity and the effect responsible for this variation. The effects of fluctuations of the
magnetosphere and temperature fluctuations in the upper atmosphere on cosmic ray variations
are examined. Cosmic ray flares with energies up to 10 Bev, and their association with
Forbush decreases are discussed in relation to their effect on cosmic ray variations. The
11-year variations, 27-day variations, and solar diurnal and annual variations are shown to be
closely interrelated, and to have modulation of galactic cosmic rays by the radial inter-

Card 1/2

USSR/Medicine - Medical Societies May 48
Medicine - Surgery

"Minutes of Meetings No 998, 999, 1,000, 1,001
and 1,002 of the Pirogov Surgical Society,"
Prof P. N. Napalkov, 15 1/2 pp

"Vest Khirurgii" Vol LXVIII, No 5

Session opened 10 Mar 48, with 347 persons
attending (217 members). N. N. Samatin acted
as chairman, S. I. Libov as secretary. A number
of reports were read and discussed, including
F. Ya Ar'yev's "Clinical, Pathological, and
Anatomical Aspects of Modern Methods of Treating

57/49T70

USSR/Medicine - Medical Societies May 48
(Contd)

Chronic Osteomyelitis From Gunshot Wounds," and
I. I. Shafer's "Problem of Intestinal Imper-
meability Caused by Ascarides."

SHAFFER, I. I.

57/49T70

Shafer, I. I.

Mbr., Departmental surgical clinic, Leningrad medical institute of sanitation and hygiene

"Function of the abdominal muscles as a factor in selection of surgical technique in inguinal hernia," Vest. khir. 72 no.4 J1-Ag. 1952.

USSR/Medicine - Physiology

FD-1341

SHAHER, I. I.

Card 1/1 : Pub. 33-19/25

Author : Plotnikova, O. V. and Shafer, I. I.

Title : Portable tonometer for measuring muscles in humans

Periodical : Fiziol. zhur. 4, 495-497, Jul/Aug 1954

Abstract : The portable tonometer is an apparatus for measuring tonicity of various muscles in man. The principal part of the apparatus is a rubber nozzle which fits tightly over a metal tube and is enclosed in a metal container with an ebonite platform. The hemisphere of the apparatus is filled with water. A thick-walled rubber tube, also filled with water, is connected to the nozzle together with a mercury manometer. The mercury manometer is left in an inclined position to increase susceptibility of the dial. The object under observation may remain in any position. Diagrams. Tables. Two Soviet and four non-Soviet references.

Institution : Chair of Normal Physiology and Faculty Surgical Clinic, Leningrad Sanitary-Hygienic Medical Institute

Submitted : May 13, 1953

NAPALKOV, P.N.(Leningrad, bol'nitsa im. Mechnikova); SHAFER, I.I.

Clinical and anatomical classification of appendicitis. Vest.khir.
77 no.8:114-120 Ag '56. (MLRA 9:10)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. P.N.
Napalkov) Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo
instituta

(APPENDICITIS
clin. & anat. classif.)

USSR/General Division. Congresses. Sessions. Conferences A-4

Abs Jour : Ref Zhur-Biologiya, No 3, 1958, 9344

Author : I. I. Shafer, M. A. Petushinov, G. H. Teplova

Inst :

Title : First Conference of the Surgeons of RSPSR in
the City of Kuybyshev (3-6 July 1956)

Orig Pub : Vestn. Khirurgii, 1957, 78, No 2, 149-153

Abstract : No abstract

Card 1/1

SHAFFER, I.I.

APPROVED FOR RELEASE: 07/20/2001

CIA-RDP86-00513R001548520001-5"

A new modified technic of plastic repair of a femoral hernia.
Trudy LSGMI 39:257-263 '58. (MIRA 12:8)

1. Kafedra fakul'tetskoy khirurgii Leningradskogo sanitarno-
gigiyenicheskogo meditsinskogo instituta (zav.kafedroy - prof.
P.N.Napalkov).

(HERNIA, FEMORAL, surg.
plastic repair (Rus))

SHAVER, I.I. (Leningrad, Kurakina ul., 32-y pavil'on, kv.33)

Portal hypertension and its importance in the treatment of liver
cirrhosis [with summary in English]. Vest. khir. 80 no.2:58-65 P
'58. (MIRA 11:3)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav.-prof. P.N.Napalkov)
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

(LIVER CIRRHOSIS, pathol.

portal hypertension (Rus)

(HYPERTENSION, PORTAL, etiol. & pathogen.

liver cirrhosis (Rus)

SHAFFER, I.I. (Leningrad, Kurakina ul., d. 1/3, 32-y pavil'on, kv. 33)

Late results of surgical treatment of inguinal hernia [with summary
in English]. Vest.khir. 82 no.2:77-79 F '59. (MIRA 12:2)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. P.N.
Napalkov) Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo
instituta.

(HERNIA, INGUINAL, surg.
remote results (Rus))

SHAFFER, I.I., dotsent

Use of organ anastomosis in the treatment of liver cirrhosis.
Trudy ISGMI 59:205-214 '60. (MIRA 14:9)

1. Gosptal'naya khirurgicheskaya klinika Leningradskogo sanitarno-
gigiyenicheskogo meditsinskogo instituta (zav. klinikoy - prof.
A.V.Smirnov).

(LIVER--CIRRHOSIS)

FADEYEVA, V.N.; SHAFFER, I.I.

Case of teratoma of the stomach. Arkh. pat. 22 no. 12:55-58 '60.
(MIRA 14:1)

(STOMACH--TUMORS)

SHAFER, I.I., dotsent

Surgical treatment of nonspecific ulcerative colitis. Vest.khir.
no.4:88-92 '61. (MIRA 14:4)

1. Iz gosspital'noy khirurgicheskoy kliniki (zav. - prof. A.V.
Smirnov) Leningradskogo sanitarno-gigiyenicheskogo meditsinsko-
go instituta.

(COLITIS)

NAPALKOV, Pavel Nikolayevich; SMIRNOV, Aleksandr Vasil'yevich, zasl.
deyatel' nauki prof.; SHRAYBER, Mark Grigor'yevich; Prinimali
uchastiye: ASOSKOVA, S.M.; IL'INSKAYA, O.V.; REFIN, Yu.M.; SHAFER,
I.I.; SHMUKLER, B.A.; EL'BERG, G.A.; RUSANOV, A.A., red.; LEBEDEVA,
Z.V., tekhn.red.

[Surgical diseases] Khirurgicheskie bolezni. Pod red. A.V.Smirnova.
Leningrad, Medgiz, 1961. 571 p. (MIRA 15:12)
(SURGERY, OPERATIVE)

SHAFER, I. J. (1968)

Preparing patients for surgery and the period following liver
cirrhosis operations. Study 13040 02:87-92 1968

Surgical approach to the spleen and subdiaphragmatic space in
liver cirrhosis patients. Ibid.:107-119

(MIRA 17:10)

ORLOV, A.A., kand. tekhn. nauk; SHAFFER, T.I., inzh.

Discussing problems of rock pressure. Ugol' 40 no.4:74-75
Ap '65. (MIRA 18:5)

1. Uchenyy sekretar' TSentral'noy komissii po probleme gornogo
davleniya (for Orlov).

SHAFER, YA. G.

FD 417

USSR/Nuclear Physics - Cosmic rays in meteorology

Card 1/1 Pub. 147-3/16

Author : Dorman, L. I.; Kuz'min, A. I.; Tyanutova, G. V.; Feynberg, Ye. L.;
Shafer, Ya. G.

Title : Variations in the intensity of cosmic rays and the role of meteorological
factor

Periodical : Zhur. eksp. i teor. fiz. 26, 537-544, May 1954

Abstract : Briefly expound the results of an experimental and theoretical study
of the influence of meteorological factors on the observed (at sea
level) intensity of the hard component of cosmic rays. Show that
knowing the distribution of temperature in the atmosphere above the
observation point one can allow for the meteorological factors with an
accuracy up to 0.1 to 0.2% in the intensity of cosmic rays. Here the
remaining divergence lies within the limits of error of the given
meteorological sounding. It turns out that the seasonal variations in
the intensity of the hard component are due to meteorological factors.
The daily variations are essentially masked by these factors.

Submitted : October 27, 1953

B-81248, 14 Dec 54

14-57-7-14621
Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7,
p 56 (USSR)

AUTHORS: Sokolov, V. D., Shafer, Yu. G.

TITLE: Seasonal Variation in the Intensity of the Hard
Component of Cosmic Rays (Sezonnyy effekt v intensiv-
nosti zhestkoy komponenty kosmicheskikh luchey)

PERIODICAL: Tr. Yakut. fil. AN SSSR, Ser. fiz., 1955, Nr 1, pp 5-
10

ABSTRACT: Bibliographic entry
Card 1/1

14-57-7-14626
Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7,
p 57 (USSR)

AUTHORS: Krasil'nikov, D. D., Shafer, Yu. G.

TITLE: Variations in Intensity of the Hard Component of
Cosmic Rays During the Movement of Air Mass Fronts
(Variatsii intensivnosti zhestkoy komponenty kosmi-
cheskikh luchey pri prokhozhdenii frontov vozdushnykh
mass)

PERIODICAL: Tr. Yakut. fil. AN SSSR, Ser. fiz., 1955, Nr 1,
pp 33-41

ABSTRACT: Bibliographic entry
Card 1/1

KRASIL'NIKOV, D.D.; KUZ'MIN, A.I.; SHAFER, Yu.G.

A case of outbursts in the intensity of cosmic rays.
Trudy I Ak.fil. AN SSSR. Ser. fiz. no.1:42-47 '55.

(MLRA 9:10)

(Cosmic rays)

SHAFER, YU. G., KOZYVA, V. K., SHVARTSMAN, B. F., KAMINER, H. S., DORMAN, L. I.

"Observation of the Large Cosmic Ray Increase of February 23, 1956 in the USSR"

Scientific Research Institute of Terrestrial Magnetism (Moscow)
Sverdlovsk Geophysical Observatory
Tbiliki Cosmic Ray Station

✓ Yakutsk Affiliate of the Academy of Sciences of the USSR
Cape Schmidt Cosmic Ray Station

Nuclear Physics, 1. No. 8, 1956, p 585-592

Category : USSR/Nuclear Physics - Cosmic rays

C-7

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 639

Author : Logachev, Yu. I., Shafer, Yu. G.

Inst : Moscow State Univ.; Yakutsk Branch, Acad. of Sciences USSR

Title : Variations of Intensity of Cosmic Radiation at High Altitudes.

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 1, 55-60

Abstract : A counter telescope without absorber was used to measure the intensity of cosmic rays at an altitude corresponding to a pressure of 300 mb. Twenty-two flights were made near Moscow. The error of each measurement was 0.3%. The observed deviations from average amounted to approximately 1% (a maximum deviation less than approximately 2%). The results were compared with the global intensity of the hard component of cosmic radiation at sea level. The correlation coefficients obtained were 0.43 ± 0.2 for Moscow and 0.73 ± 0.1 for Yakutsk is due to a more accurate allowance for meteorological corrections in that station and to the world-wide character of the observed variations. Inasmuch as the measurements were carried out at a solar-activity minimum, the variations observed were considerably less than those observed prior to 1949 (the amplitude of which was 5 -- 10%).

Card : 1/1

SHAFAER, YU G.

Category : USSR/Nuclear Physics - Cosmic rays

C-7

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 622

Author : Kuz'min, A.I., Skrypin, G.V., Tyanutova, G.V., Shafer, Yu.G.

Inst : Yakutsk Branch Acad. of Sciences USSR.

Title : Unique Flare of Intensity of Cosmic Rays.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 1, 66-68

Abstract : Report on the results of measurements of intensities of cosmic rays during the time of the great flare of solar activity on 23 February 1956. The measurements were made in Yakutsk (elevation 101 meters, 51° northern latitude, 129° eastern longitude) with the aid of ionization chambers shielded with 12 cm of lead and aimed with a telescopic system made of Geiger-Mueller counters. The maximum by which the intensity exceeded the usual value occurred at 3.40 -- 4 hours Greenwich mean time and amounts to 165 -- 200%, depending on the type of recording apparatus. Apparatus recording extensive showers with a density of 25 and 50 particles per square meter did not detect any increase in intensity.

Card : 1/1

SHAFER, YU. G.

53-2-2008

AUTHOR

TITLE

PERIODICAL

ABSTRACT

VERNOV, S.N., LOGACHEV, Yu.I., CHUDAKOV, A.B., SHAFER, Yu.G.
The Investigation of the Variations of Cosmic Radiation
(Issledovaniye variatsiy kosmicheskogo izlucheniya. Russian)
Uspekhi Fiz. Nauk, 1957, Vol 63, Nr 1b, pp 149 - 162 (U.S.S.R.)

The present paper reports on the problem of the use of an artificial satellite for the study of the variations of cosmic radiation. By means of a comparatively simple apparatus consisting of a counter and ionization chamber the following phenomena can be studied: a) the variations of the primary cosmic radiation. b) the variations of the multiply charged component of the primary cosmic radiation which consists of helium nuclei and heavier atoms. c) the geomagnetic field at great distances from the earth. d) the albedo of the earth for cosmic radiation. e) the structure of currents emitted by the sun.

I. Possibilities offered by the artificial earth satellites for the investigation of the variations. The variations of the secondary cosmic radiation differ essentially from the variations of the primary radiation. It is just for that reason that the study of the variations of the primary radiation is desirable. The variations recorded at sea level are usually much smaller than the variations of primary radiation. The measurements obtained by means of rockets are very inaccurate because of the short stay of the rockets in high altitudes, but artificial earth

Card 1/1

The Investigation of the Variations of Cosmic Radiation

53-11-10/28
satellites offer great possibilities in this respect. Simultaneous measurements by counters and ionization chambers make a comparison of the variation of intensity of the primary protons with the variation of the intensity of the heavier primary nuclei possible. The variations have to be determined in the various regions of the energy spectrum of cosmic radiation. This is only possible on satellites with suitably selected orbits. The measurements of the intensity above the polar regions are of special interest.

II. The various phenomena which can be studied by an apparatus fixed in the satellite. The authors here consider the case that the satellite flies over the poles and is half of the time in the earth's shadow. Further, the measurement data can be transmitted during the entire time of the satellite's existence. The experimental material thus obtained on one single day by far surpasses the hitherto existing material in this field. By a comparison of the material obtained from various revolutions and on various days the variations of intensity of the cosmic radiation can be concluded. If the data for the intensity and for the ionization power of cosmic radiation over the entire surface of the globe is available, interesting conclusions concerning the following phenomena may be drawn:

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53-1b-10/18

The Investigation of the Variations of Cosmic Radiation

- 1.) the alteration of intensity in time (great irregularities of intensity in connection with eruptions of the solar chromosphere, reduction of intensity during magnetic storms, the variation (one and a half hour variation)) connected with the revolution of the satellite round the earth, the variations of intensity of the heavy nuclei of primary cosmic radiation, the long-time periodic variations, the experimental verification of the connection between primary and secondary variations.
- 2.) the earthmagnetic field and the interplanetary magnetic field.
- 3.) the alteration of the earth's albedo for cosmic radiation.
- 4.) the search for electrons and photon in the primary cosmic radiation.

III. The apparatus for the study of the variations of cosmic radiation outside the earth's atmosphere can determine these variations by measuring the variations of the ionization or the variations of particles passing through a counter. The influence of a possible revolution of the satellite is pointed out, but this variation can at least partially be compensated by fixing two counters to the satellite. For the radio-technical equipment semiconductor triodes and tiratrones with a cold cathode are used. The following elements of the apparatus are discussed more in details: a) the counters of the charged particles, and b) the

Card 3/4

53-1b-10/18

The Investigation of the Variations of Cosmic Radiation
counting method by means of semiconductor triodes. (5 illustrations)

ASSOCIATION
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SUBMITTED
AVAILABLE

Not given

Library of Congress

Card 4/4.

SHAFFER, Yu.G.

Investigation of cosmic rays during the International Geophysical Year.
Nauch. soob. IAFAN SSSR no.1:57-67 '58. (MIRA 17:1)

89790

S/169/61/000/003/007/022
AC05/AC05

3,1800 (1041, 1062, 1178)

Translation from: Referativnyy zhurnal, Geofizika, 1961, No. 3, p. 10, # 3078

AUTHOR: Shafer, Yu. G.

TITLE: The Investigation of the Cosmic Rays During the IGY

PERIODICAL: "Nauchn. soobshch. Yakutskiy fil. Sibirsk. Otd. AN SSSR", 1958,
No. 1, pp. 57-67

TEXT: The author reports the investigations and observations carried out during the IGY by the Laboratoriya Kosmicheskikh Luchey Yakutskogo Filiala AN SSSR (Laboratory for Cosmic Rays of the Yakutsk Branch Office of the Academy of Sciences of USSR). The measurements of the vertical intensity of the cosmic rays in the stratosphere were carried out with a portable equipment which can be lifted by balloons 2-3 times in 24 hours. Recordings of the intensity of various components at the Earth's surface by some devices (ionization chamber, counter telescope, neutron monitor, and equipment for the recording of wide atmospheric showers) made it possible to obtain information on the variations in intensity within the wide energy range from about $2 \cdot 10^9$ to about 10^{17} ev. Moreover, a complicated

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89790

The Investigation of the Cosmic Rays During the IGY

S/169/61/000/003/007/022
A005/A005

subsurface equipment was developed consisting of some counter telescopes which were arranged at depths of 7, 20 and 60 m of water equivalent. With these devices, the continuous recording of intensity of the fixed component in vertical direction as well as recording in South- and North-directions under angles of 30° and 60° with reference to the vertical were carried out.

N. Kaminer

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

SHAFFER, Yu G.

PHASE I BOOK EXPLOITATION 881

Akademiya nauk SSSR. Yakutskiy filial

Variatsii intensivnosti kosmicheskikh luchey (Variations of the Intensity of Cosmic Rays) Moscow, Izd-vo AN SSSR, 1958. 168 p. (Series: Its: Trudy, seriya fizicheskaya, vyp. 2) 1,500 copies printed.

Resp. Ed.: Shafer, Yu.G., Candidate of Physical and Mathematical Sciences; Ed. of Publishing House: Fradkin, M.I.; Tech. Ed.: Pavlovskiy, A.

PURPOSE: This collection of articles is for scientists and students of cosmic rays and meteorology.

COVERAGE: This issue contains articles on experimental methods in the continuous registration of cosmic rays, the investigation of meteorological effects of the different components of cosmic rays, and the connection between variations in cosmic ray intensity and solar and magnetic activity. Part I describes apparatus used in

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3

Variations of the Intensity of Cosmic Rays 881

measuring cosmic ray intensity on and under the earth's surface and in the upper layers of the atmosphere, and specifically discusses the ASK automatic ionization chamber. Part II discusses the theory, methods and results of the investigation of meteorological effects of the various components of cosmic rays. Part III discusses the characteristics of daily variations in cosmic ray activity. The following scientists are mentioned in the introduction: S.N.Vernov, Corresponding Member of the AS USSR, Professor Ye.L.Feynberg, and N.L.Grigorov, Doctor of Physical and Mathematical Sciences. The articles are accompanied by diagrams, tables, and bibliographic references.

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3

SHAFFER, Yu.G.

Investigation of cosmic rays during the International Geophysical
Year. Izv. Sib. otd. AN SSSR no.8:3-17 '58. (MIRA 11:10)

1. Yakutskiy filial AN SSSR.
(Cosmic rays)

SHAFER, YU. G.

"THE EFFECT OF SOLAR ACTIVITY DECREASE IN COSMIC RAY INTENSITY FROM STRATOSPHERE MEASUREMENTS"

YU. G. Shafer

1. Measurements of cosmic rays in the stratosphere were started in Yakutsk in July 1957 using a double coincidence telescope. During the IGY approximately 200 flights were undertaken.
2. Data analysis shows that in late 1958 an increase in the intensity equivalent to 6, 15 and 40% took place as compared with 1957 at the 150, 75 and 25 m.b. levels respectively.
3. The indicated change in the stratospheric variation is compared with measurements of the different components at sea level and on this basis the variation energy spectrum is determined.
4. The variation of the magnetic storm effect, for the intensity of cosmic rays in the stratosphere, with variation in solar activity is studied.
5. The results are discussed and the variation of the "knee" of the latitude effect, for cosmic rays in the stratosphere, with solar activity is evaluated.

report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

28827

S/169/61/000/004/002/026

A005/A130

3.2430 (1482,1559)

AUTHOR: Shafer, Yu.G.

TITLE: The falling-off effect of solar activity in cosmic ray intensity according to measurements in the stratosphere

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 4, 1961, 15, abstract 4 G 87.
(Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 4. Moscow AN SSSR, 1960, 71 - 77)

TEXT: Measurement data on the ionizing component in the stratosphere (Yakutsk, 1957 - 1959) revealed a marked variation of emission intensity connected with a variation of the level of solar activity. During the period 1958 - 1959, the intensity at an altitude of 150 mb was greater by $3.5 \pm 2\%$, and at 50 mb by $16 \pm 8\%$ than in the period 1957 - 1958. The hard emission recording data obtained by means of subsurface counter telescopes did not reveal this effect. Hence the author concludes that the observed effect is due to particles of relatively low energies ($E \sim 10$ Bev). The author assumes that the increase in intensity during the period 1957 - 1959 may be explained by a decrease in the number and intensity of solar corpuscular streams carrying "frozen" magnetic fields.

[Abstracter's note: Complete translation.]

Card 1/1

S/169/61/000/005/040/049
A005/A130

AUTHORS: Shafer. Yu.G., Yarygin, A.V.

TITLE: Investigation of variations of primary cosmic radiation by means of artificial earth satellites

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 19, abstract 5 G 155. (Tr. Yakutskogo fil. AN SSSR. Ser. fiz., 1960, no. 3, 5-14)

TEXT: The authors discuss the most expedient choice of recording equipment necessary for measuring the primary cosmic ray stream and its intensity variations by means of artificial earth satellites and space rockets. They prescribe the utilization of single counters, a double coincidence telescope and an ionization chamber. They submit recommended technical characteristics and describe devices that were tested in geophysical rockets (ionization chamber and counter devices).

[Abstractor's note: Complete translation.]

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3.2410

29663

S/169/61/000/005/021/049

A005/A130

AUTHORS: Belomestnykh, V.A., Nedzvedskiy, B.S. and Shafer, Yu.G.
TITLE: Study of intensity variations of cosmic rays in the stratosphere
PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 11, abstract 5 G 91. (Tr. Yakutskogo fil. AN SSSR. Ser. fiz., 1960, no. 3, 15-21)

TEXT: The authors describe in detail the equipment used at Yakutsk for the investigation of cosmic rays in the stratosphere. The radiation was recorded by a counter telescope with double coincidences and single counter. The total weight of equipment was 2,150 g. The statistical recording accuracy in the Pfozter maximum ($\sim 100 \text{ g/cm}^2$) amounts to 1.5-3.0%. Some results of analyzing the data for 1957-1959 are given. In particular, the authors reveal that during this period the intensity of cosmic rays at the 50 mb level ($\sim 20 \text{ km}$) increased by $(16 \pm 8)\%$ owing to the appearance of additional radiation flux with energies up to $(10 \pm 2) \text{ Bev}$.
[Abstractor's note: Complete translation.]

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S/169/61/000/005/028/049
A005/A130

AUTHORS: Chirkov, N.P., Shafer, Yu.G.

TITLE: The effect of air mass fronts on cosmic ray intensity and the role of the lower layers of the stratosphere

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 12, abstract 5 G 98. (Tr. Yakutskogo fil. AN SSSR, Ser. fiz., 1960, no. 3, 78-83)

TEXT: Using the epoch superposition method, the authors investigated the effect of change in air mass (front effect) on the intensity of the hard component of cosmic rays. They studied 49 warm and 48 cold fronts that passed over Moscow in the period from 1953 to 1957. They show that incident to the passage of a warm front cosmic ray intensity decreases by $(0.48 \pm 0.10) \%$. The correlation for observed (δI) and theoretically calculated (δN) variations of intensity attains $r \approx 0.93 - 0.98$. Incident to the passage of a cold front the increase in intensity amounts on an average to $(0.53 \pm 0.10) \%$, and the correlation coefficient for δI and

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The effect of air mass fronts on cosmic ray ... S/169/61/000/005/028/049
A005/A130

δN also attains a high value. The influence of the lower layers of the stratosphere is expressed by a pronounced increase of the front effect on the intensity of the hard component. It is noted that there exists a marked correlation between the temperature contribution to the front effect and the relative number of sunspots.

N.K.

[Abstractor's note: Complete translation.]

✓

Card 2/2

SHAFTER, Yu.G.; YARYGIN, A.V.

Measuring cosmic rays with geophysical rockets. Isk.sput.Zem.
no.4:184-194 '60. (MIRA 13:5)
(Cosmic rays--Measurement)
(Rocket research)

SHAHER, YU.G., VERNOV, S.N., KUZ'NEN, A.I., KRINSKIY, G.F., SHAHER, G.V.,

"Cosmic Ray Out bursts on November 12-15, 1960,"

report presented at the Intl. Conference on Cosmic Rays and
Earth Storms, Kyoto, Japan, 4-15 Sept 1961.

S/058/62/000/006/018/136
A061/A101

AUTHORS: Kuz'min, A. I., ~~Yefimov, N. N.~~, Krasil'nikov, D. D., Skripin, G. V.,
Sokolov, V. D., ~~Shafer, G. V.~~, Shafer, Yu. G.

TITLE: A study of the variations with time of different cosmic ray components by one-point observations

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 53, abstract 6B371
(In collection: "Kosmicheskiye luchy", no. 3, Moscow, AN SSSR, 1961,
64 - 79, English summary)

TEXT: A recording apparatus of the Yakutsk cosmic radiation post is described, and the principal results of a study on variations of intensity are presented. The following instruments are laid out on the surface of the Earth: a neutron monitor, two shielded ionization chambers, and counter telescopes recording vertical and oblique cosmic ray components. In addition, counter telescopes placed at depths of 7.20 and 60 m water equivalent record the muonic component in the energy range of $2 \cdot 10^9 \div 10^{11}$ ev, while the continuous frequency recording on latitudinal atmospheric showers yields information on $5 \cdot 10^{13} \div 10^{16}$.

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A study of the...

S/058/62/000/006/018/136
A061/A101

ev particles. The values of the barometric coefficient of different components are indicated, as well as the principal results of an investigation of 27-day and solar day variations of intensity. Phenomena observed during magnetic storms are briefly described. The interrelation factors between variations of intensity of primary and secondary cosmic ray components up to energies of ~ 700 Bev are determined. These factors are utilized for the analysis of some types of variations of intensity.

N. Kaminer

[Abstracter's note: Complete translation]

Card 2/2

3,2410 (2205, 2705, 2805).

37283
S/169/62/000/004/068/103
D218/D302

AUTHORS: Shafer, Yu.G., and Sokolov, V.D.

TITLE: Some results of stratospheric studies of the intensity of cosmic rays at Yakutsk

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 4, 1962, 13, abstract 4G67 (V sb. Kosmicheskiye luchy, no. 3, M., AN SSSR, 1961, 143-148)

TEXT: A report is given of the results of measuring cosmic-ray intensity in the stratosphere above Yakutsk in 1958 - 1959. The radiation was recorded with the aid of a double-coincidence counter telescope. During one of the flights of the sounding balloon, the statistical accuracy of the measurements at the maximum of the altitude curve was at least 2 %. In many cases a major reduction in the intensity was recorded in the intensity while the Forbush effect was taking place at the earth's surface. Over 20 daytime and night flights were made in 1958 in order to determine the diurnal cosmic-ray effect in the stratosphere. On the average, the intensity at night is higher than in daytime by approximately 1 % at the 500 mb
Card 1/2

Some results of stratospheric studies ... S/169/62/000/004/068/103
D218/D302

level, and by 10 % at the maximum of the Pfofzer curve, although the experimental errors are comparable with the effect itself. A seasonal intensity variation was established. Its amplitude at the 500 mb level is 8 % and falls to 6 % at the 60 mb level. [Abstractor's note: Complete translation].

Card 2/2

KUZ'MIN, A.I.; SHAFER, G.V.; RYMSKIY, G.F.; SHAFER, Yu.G.

Cosmic ray flares during Nov. 12-15, 1960. Geomag. i aer. 1
no.4:510-522 JI-Ag '61. (MIRA 14:12)

1. Sibirskoye otdeleniye AN SSSR, Yakutskiy filial.
(Cosmic rays)

KUZ'MIN, A.I.; KRYMSKIY, G.F.; SHAFFER, G.V.; SHAFFER, Yu.G.

Cosmic ray bursts of November 12-15, 1960. Dokl. AN SSSR 137
no.4:844-847 Ap '61. (MIRA 14:3)

1. Laboratoriya fizicheskikh problem Yakutskogo filiala Sibirskogo
otdeleniya AN SSSR. Predstavleno akademikom M.A. Lavrent'yevym.
(Cosmic rays)

h2261

S/845/62/000/004/004/013
E032/E514

3.2410 (2805)

AUTHORS: Shafer, Yu.G. and Sokolov, V.D.
TITLE: Seasonal effect in the cosmic-ray intensity deduced from measurements in the stratosphere
SOURCE: Akademiya nauk SSSR. Yakutskiy filial. Trudy. Seriya fizicheskaya. no. 4. 1962. Variatsii intensivnosti kosmicheskikh luchey, 49 - 50
TEXT: The cosmic-ray intensity was measured by the counter telescope described previously (V.A. Belomestnykh, Yu.G. Shafer, Tr.YaFAN SSSR, ser. fizich., no. 2, 47, 1958). The figure shows the results of an analysis of the 1958 data in the form of mean monthly variations at different pressure levels. As can be seen, the amplitude of the seasonal variation reaches 8% at the 300 mb level and decreases with altitude, reaching approximately 6% at the 60 mb level. This indicates a considerable contribution due to low-energy μ -mesons and shower processes due to changes in the atmospheric density. Both effects act in the same direction. In summer, the probability of decay of low-energy μ -mesons is increased owing to the increase in the geometrical height of the

Card 1/2

Seasonal effect in

S/845/62/000/004/004/013
EO32/E314

atmosphere and this process removes both the μ -mesons themselves and their decay products (low-energy electrons) which were not recorded by the device. At the same time, the density of shower particles is reduced owing to the reduction in the atmospheric density and hence the probability of spurious coincidences in the telescope is also reduced. The opposite picture is observed in winter. If this interpretation is correct, it is to be expected that the seasonal effect will not be observed with a single counter or will be small owing to a considerable general radiation background in the atmosphere. This is a preliminary report; data for 1959-1960 are being analyzed. There are 2 figures.

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12268
S/845/62/000/004/011/013
EO32/E314

3.2410 (2805)

AUTHOR: Shafer, Yu.G.

TITLE: The "day-night effect" in the intensity of cosmic rays as deduced from measurements in the stratosphere

SOURCE: Akademiya nauk SSSR. Yakutskiy filial. Trudy. Seriya fizicheskaya. no. 4. 1962. Variatsii intensivnosti kosmicheskikh luchey, 111 - 112

TEXT: It is currently considered that the diurnal variations in cosmic-ray intensity are in some way associated with the effect of solar corpuscular streams on primary cosmic rays. However, it is pointed out that various earlier hypotheses have not as yet been disproved. For example, according to the hypothesis of Janossy (Z.Phys., 104, 430, 1937) there should be an additional influx of low-energy particles (less than 10 BeV), due to a source lying to the left of the Sun at about 90° to the Earth-Sun line. Other hypotheses have also been advanced but, since the experimental data are not sufficiently accurate, no definite conclusions can be reached. It is noted that stratospheric measurements are particularly important in this connection but are rather uncommon in the published literature.

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The "day-night effect"....

S/845/62/000/004/011/013
EO32/E314

A general feature of all such measurements has been the great experimental error which, in all cases, was either equal to or greater than the day-night effect. The author made more than twenty night and day flights from Yakutsk in 1958 and the results of these experiments are as follows. If an average is taken of all the results obtained during daytime, it turns out that the night intensity is higher than the day intensity. The day-night effect at the 500 mb level is 1% and reaches 10% at the maximum of the Pfotser curve. However, the experimental errors were rather great, namely, 11 and 17% at the 100 and 500 mb daytime levels. At night the corresponding figures were 9 and 18%. If the flights carried out during magnetic disturbances are excluded, the day-night effect is limited to an average value of 2%. These results indicate that the diurnal effect in the intensity of cosmic rays in the stratosphere is very slight and support the corpuscular theory of variations. They indicate that the energy spectrum of solar-diurnal variations is cut-off on the low-energy side. More careful and more frequent stratospheric measurements at minimum solar activity and particularly at high latitudes should throw further light on the mechanism of diurnal variations.

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42270

S/845/62/000/004/013/013
EO32/E314

3.2410 (2805)

AUTHORS: Shafer, Yu.G. and Sokolov, V.D.

TITLE: The effect of magnetic storms on the intensity of cosmic rays as deduced from measurements in the stratosphere

SOURCE: Akademiya nauk SSSR. Yakutskiy filial. Trudy. Seriya fizicheskaya. no. 4. 1962. Variatsii intensivnosti kosmicheskikh luchey, 139 - 141

TEXT: The results of a preliminary analysis of experimental data obtained during intense and very intense magnetic storms are reported. The cosmic-ray intensity was measured with the aid of the counter-telescope described previously (Belomestnykh and Shafer, Tr. YAFAN SSSR, ser. fizich., no. 2, 47, 1958). The intensity was, in fact, measured in 1959 at the 100 mb level. In order to compare the effect of a magnetic storm in the stratosphere with its effects at sea-level, use was made of data obtained with a neutron monitor, corrected for barometric pressure, and the intensity of the hard component of cosmic rays corrected for bursts and barometric pressure. The effect of a magnetic storm on the intensity of
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S/845/62/000/004/013/013
EO52/E314

The effect of

cosmic rays in the stratosphere was estimated as the difference between flight data during a storm and the data obtained outside the storms during days of undisturbed cosmic-ray intensity. Fig. 1 shows the data obtained during seven flights in July, 1959, when there were three successive magnetic storms. Curve 1 in this figure represents the hard component and curve 2 the neutron component. The circles represent measurements in the stratosphere. As can be seen from this figure and from the numerical data reproduced in this paper, the effect of a magnetic storm in the stratosphere is much greater than the corresponding effect in the neutron and hard components at sea-level. A further fact which was noticed was that at approximately 12 hours before one of the July storms, the counting rates above the 300 mb level were appreciably higher than the average intensity in undisturbed days in July. The increase was as high as 10% at the 100 mb level and 20% at the 50 mb level. This effect may be due to additional radiation or the appearance of a radioactive cloud. However, the data are insufficient to differentiate between these two alternatives. There are 2 figures and 1 table.

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KUZ'MIN, A.I.; SHAFFER, G.V.; SHAFFER, Yu.G.; KRASIL'NIKOV, D.D.;
KRYMSKIY, G.F.; MAMRUKOV, A.P.; SMIRNOV, N.S.; YARIN, V.I.

July 1959 according to data of comprehensive geophysical
observations at Yakutsk. Trudy IAFAN SSSR. Ser. fiz. no.4:142-156
'62. (MIRA 15:12)

(Magnetic storms)
(Cosmic rays)

41907
S/560/62/000/013/005/009
I046/I242

3.24/10

AUTHOR: Chafer, Yu. G.

TITLE: The effect of the decrease of solar activity on the cosmic ray intensity according to measurements on geophysical rockets of 1958 and 1960

SOURCE: Akademiya nauk SSSR. Isskustvennyye sputniki Zemli. no.13, Moscow, 1962, 85-88

TEXT: Cosmic ray measurements carried out at an altitude of 210 km on July 2, 1958, and on September 16 and 22, 1960, show that in 1960, when the solar activity was lower than in 1958, the primary radiation intensity was 9.5% higher than in 1958 ($\Delta I = I_2 - I_1 = 0.12 \pm 0.04$ particles.cm⁻².sec⁻¹). Neutron (I_N) and hard (I_H)

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S/560/62/000/013/005/009
I046/I242

The effect of the...

components measured on the ground in Yakutsk vary likewise in correlation with the 11-year cycle of solar activity, viz.,
 $I_N = 13.4\%$, $I_{\gamma} = 1.8\%$. There are 3 figures and 1 table.

SUBMITTED: June 28, 1961

Card 2/2

SOKOLOV, V.D.; SHAFER, Yu.G.

Albedo of slow neutrons in the atmosphere at a depth of 30 g/cm⁻².
Geomag. i aer. 2 no.5:836-838 S-O '62. (MIRA 15:10)

1. Yakutskiy filial Sibirskogo otdeleniya AN SSSR.
(Atmosphere) (Neutrons)

S/C48/62/026/006/016/020
B125/B102

AUTHORS: Kuz'min, A. I., Krynskiy, G. F., Skripin, G. V., Chirkov,
N. P., Shafer, G. V., and Shafer, Yu. G.

TITLE: Some results of investigations relating to variations of
cosmic rays

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26,
no. 6, 1962, 808-817

TEXT: The main results gained in the Yakutskaya laboratoriya (Yakutsk
Laboratory) concerning various meteorological effects and primary
variations are here reviewed, covering papers published by Kuz'min et al.
in Tr. Yakutskogo filiala AN SSSR. Ser. fiz., no. 5, 1962. There are
12 figures and 1 table.

ASSOCIATION: Yakutskiy filial Sibirskogo otdeleniya Akademii nauk SSSR,
Laboratoriya fizicheskikh problem (Yakutsk Branch of the
Siberian Department of the Academy of Sciences USSR,
Laboratory of Physical Problems)

Card 1/1

Yu. G. SHAFER, V. D. SOKOLOV, N. G. SKRYABIN, V. F. LUTENKO

Distribution of Cosmic Ray Intensity in the Atmosphere upto the Altitude 500 km.

report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur India,
2-14 Dec 1963

L 32218-65 EWT(1)/FCC/EWG(v)/EEC(t)/EEC-4/EMA(h) Po-4/Pq-4/Pe-5/Pae-2/Peb/
 PI-4 GS/CW/WS-2 S/0000/64/000/000/0029/0036
 ACCESSION NR: AT5006964

AUTHOR: Shafer, Yu. G. (Candidate of physico-mathematical sciences);
Sokolov, V. D.; Krymskiy, G. F.; Skrvabin, N. G.

TITLE: Seasonal variations in the intensity of cosmic rays in the stratosphere

SOURCE: AN SSSR. Yakutskiy filial. Institut kosmofizicheskikh issledovaniy i
aeronomii. Geo- i geliograficheskiye efekty v kosmicheskikh luchakh i polynnykh
siyaniyakh (Geo- and heliophysical effects in cosmic rays and auroras). Moscow,
Izd-vo Nauka, 1964, 29-36

TOPIC TAGS: cosmic ray, stratosphere, standard level, ionizing component, mu
 meson, temperature coefficient, ozone layer

ABSTRACT: The intensity of cosmic rays in the stratosphere was measured in Yakutsk
 during the period 1958-1961. Temperatures on standard levels were taken into
 consideration in processing the observation data obtained. The numbers obtained
 by means of instrument counting relate strongly to the presence of mesons. The
 main ionizing component in the stratosphere consists of the electron-photon com-
 ponent and disintegration particles; therefore, seasonal variations of the general
 ionizing component of cosmic rays depend upon μ meson disintegration under the

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L 32218-65

ACCESSION NR: AT5006964

temperature changes in the upper layers. Temperature coefficients were determined for the standard pressure levels of 100, 300, and 500 g·cm⁻². Significant seasonal temperature variations in the upper atmospheric layer above the 50 g·cm⁻² level take place as a result of changes in the thickness of the ozone layer. Agreement between the theoretical results computed on a temperature basis and the experimental data can be attained only by assuming strong temperature changes in the upper layer above the 50 g·cm⁻² pressure level. Orig. art. has: 5 figures, 5 formulas, and 2 tables. [EG]

ASSOCIATION: none

SUBMITTED: 23Oct64

ENCL: 00

SUB CODE: AA

NO REF SOV: 005

OTHER: 000

ATD PRESS: 3204

Card 2/2

L 32220-65 FSS-2/EWT(1)/FCC/ENG(v)/EEG(t)/EEC-l/EWA(h) Po-4/Pq-4/Pe-5/Pae-2/

Feb/Pi-4 GS/GW-2/WS-2

ACCESSION NR: AT5006969

S/0000/64/000/000/0082/0087

AUTHOR: Shafer, Yu. G. (Candidate of physicomathematical sciences)

TITLE: Secular variations in the intensity of primary radiation during the period 1958-1960

SOURCE: AN SSSR. Yakutskiy filial. Institut kosmofizicheskikh issledovaniy i aeronomii. Geo- i geliiofizicheskiye efekty v kosmicheskikh luchakh i polynarnykh siyaniyakh (Geo- and heliophysical effects in cosmic rays and auroras). Moscow, Izd-vo Nauka, 1964, 82-87

TOPIC TAGS: cosmic ray, geophysical rocket, solar activity, geomagnetic disturbance, ionospheric disturbance, neutron component, hard component, primary particle

ABSTRACT: Cosmic rays were measured by geophysical rockets up to heights of 210 km on 2 July 1958 and 16 and 22 September 1960 during a decrease in solar activity. These rockets were launched in periods when geomagnetic and ionospheric disturbances were not observed. Measurement data are given in a table in the original article. A difference was noted between the results obtained in 1958 and in 1960. During the period 1958-1960, an increase was observed in the intensities of the neutron and the hard components of cosmic rays. The integral spectrum of

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32220-65

ACCESSION NR: AT5006969

primary particles may be determined by the geomagnetic threshold of the observation point. Using the threshold value for the corresponding dates and places, variations in the neutron and hard components may be determined by special formulas. Data obtained by computations on the basis of two hypotheses — the slowing down by the electric field and the dispersion by magnetic formations — were compared with experimental data. No agreement was found between the three results. Orig. art. has: 2 figures, 2 tables, and 14 formulas. [EG]

ASSOCIATION: none

SUBMITTED: 23Oct64

ENCL: 00

SUB CODE: AA

NO REF SOV: 007

OTHER: 001

ATD PRESS: 3203

Card 2/2

SHAFFER, Yu.G., kand. fiz.-matem. nauk, otv. red.; FRADKIN, M.I.,
red.

[Geo- and heliophysical effects in cosmic rays and
auroras] Geo- i geliiofizicheskie efekty v kosmicheskikh
luchakh i poliarnykh silaniyakh. Moskva, Nauka, 1964. 157 p.
(MIRA 17:12)

1. Akademiya nauk SSSR. Yakutskiy filial, Yakutsk. Institut
kosmofizicheskikh issledovaniy i aeronomii.

L 15691-65 FSF(h)/FSS-2/EWT(1)/EEC(m)/FS(v)-3/EWG(h)-2/EWG(v)/FCC/EWA(d)/
EEC-4/EEC(t)/EWA(h) Po-4/Pa-5/Pq-4/Pg-4/P1-4/P1-4/Pae-2/Peb/Pb-4 AEDC/
AFFTC/AFMDC/ESD-3/RADC/APGC/ESD(2)/ESD(e1)/AEDC(a)/SSD/BSO/AFWL/AFMDC/AFETR/
ACCESSION NR: AP5000175 AFTC(b)/AFTC(a)/ASD-3 S/0293/64/002/006/0928/0932
TT/GW/WS

AUTHOR: Shafer, Yu. G.; Sokolov, V. D.; Skryabin, N. G.; Lyutenko, V. F.; Yarygin,
A. V.; Salimzibarov, R. B.

TITLE: Intensity distribution of cosmic rays in the atmosphere to a height of
500 km

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 6, 1964, 928-932

TOPIC TAGS: solar activity cycle, cosmic ray, geophysical rocket, single counter,
ionization camera, Kosmos satellite, cosmic ray albedo, magnetic storm

ABSTRACT: In the period from 1958 to 1963, during a decrease in solar activity,
cosmic ray measurements have been carried out by means of geophysical rockets and
satellites of the Kosmos type. Geophysical rockets were equipped with single
counters and ionization cameras. Satellites of the Kosmos type were equipped with
ionization cameras, single counters, and counting telescopes for measuring the
cosmic ray albedo. Rocket and satellite launchings were scheduled for days with-
out magnetic storms and quiet sun. Primary cosmic rays were measured at heights
of 100-500 km. The cosmic ray albedo measured by rockets equipped with special

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L 15691-65

ACCESSION NR: AP5000175

devices was found to be insignificant. Numerical values of measurement data show a slight increase in particle count with height. No indications were found which would associate systematic variations in the intensity of primary cosmic rays with the eleven-year cycle of solar activity. Orig. art. has: 1 figure and 3 tables.

ASSOCIATION: none

SUBMITTED: 13May64

NO REF SOV: 003

ENCL: 00

OTHER: 008

SUB CODE: AA, SV

ATD PRSS: 3144

Card 2/2

L 21757-65 EWG(j)/FSS-2/EWT(1)/EWT(m)/EWG(v)/FCC/T/EEC-4/EEC(t)/EWA(h) Po-4/
Pe-5/Pn-4/Pae-2/Pe6/P1-4/Pb-4 IJP(o)/SSD/AFWL/SSD(o)/AFMD(o)/AFETR/ESD(t)
ACCESSION NR: AP5000176 GN-2/WS 8/0293/64/002/006/0933/0935

AUTHOR: Shafer, Yu. G., Sokolov, V.D., Skryabin, N.G., Dergeym, S.K.,
Salimzibarov, R.B.

TITLE: cosmic ray, upper atmosphere, primary cosmic radiation, cosmic ray apparatus,
cosmic ray asymmetry, cosmic ray albedo particle

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 6, 1964, 933-935

TOPIC TAGS: Some results of measurements of east-west asymmetry in the intensity of
primary cosmic radiation

ABSTRACT: Measurements of the east-west asymmetry of primary cosmic radiation were made to heights of 500 km in 1962. The measuring apparatus was placed in the upper compartment of the rocket directly under the nose cone. The latter was separated at a height of 70-80 km. The apparatus (shown schematically in Fig. 1 of the Enclosure) consisted of a system of many counters, collected into three groups of triple-coincidence telescopes with 3 to 5 telescopes in each group. One of these groups sampled particles in a vertical direction. The two other groups of telescopes were mounted in the "east-west" plane at an angle of 60° to the vertical. The rockets were stabilized in space with respect to azimuth and relative to the zenith with an accuracy of $\pm 2^\circ$. These measurements made

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L 21757-65

ACCESSION NR: AP5000176

it possible to estimate both the cosmic ray intensity in the vertical, east and west directions and the number of cases of local showers. The experimental value of the effect of east-west asymmetry (K_{ex}) on the basis of the expression

$$K_{ex} = 2 \frac{I_{west} - I_{east}}{I_{west} + I_{east}} \cdot 100\%$$

had a mean value of $26 \pm 2\%$. However, the value K_{ex} determined in this way will be masked by albedo particles. If the particle energy spectrum is assumed to have the form $AE^{-\gamma}$ and if the earth's magnetic field is considered a dipole, beyond the limits of the atmosphere the intensity in a vertical direction will have an average value of the intensities in the slanting directions

$$I_{vert} = \frac{I_{west} + I_{east}}{2}$$

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ACCESSION NR: AP5000176

The experimental value of the mean intensity obtained from the data of the inclined telescopes was greater than the intensity measured by the vertical telescope. This difference is not random and can be interpreted as the absence of a contribution of a significant quantity of albedo particles to the intensities recorded by the vertical telescope. By knowing the intensity of the albedo particles it is possible to find the mean value of the effect of east-west asymmetry of primary cosmic radiation (K), using the expression

$$K = \frac{I_{\text{west}} - I_{\text{east}}}{I_{\text{vert}}} \cdot 100\%$$

it was equal to $34\% \pm 3\%$. The predicted value K, determined from the theory of geomagnetic effects using the integral energy spectrum of primary cosmic radiation, is 35-37%. Thus, two independent methods for determination of K give values in agreement within the limits of error. Orig. art. has: 3 formulas, 2 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 12May64

ENCL: 01

SUB CODE: ES

OTHER: 002

NO APPROVED FOR RELEASE: 07/20/2001

CIA-RDP86-00513R001548520001-5

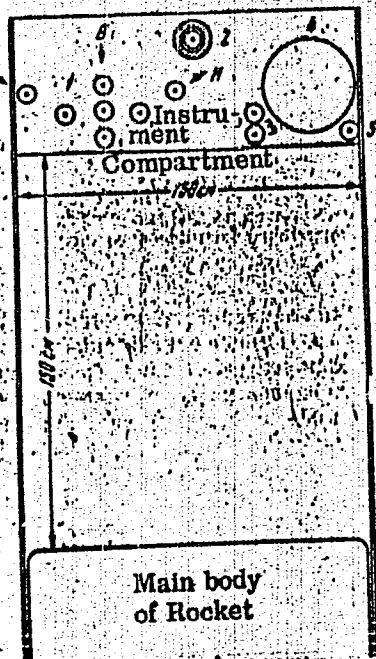
Card 3/4

L 21757-65
ACCESSION NR: AP5000176

ENCLOSURE: 01

Figure 1. Sketch of placement of measuring instruments in the upper instrument compartment of a rocket.

1. apparatus for measuring east - west asymmetry, B-group of vertical and H-group of inclined triple-coincidence counter telescope;
2. shielded single Geiger counter;
3. double-coincidence counter telescope;
4. ionization chamber;
5. single unshielded Geiger counter.



Card 4/4

SHAFFER, Yu.G., kand. fiz.-mat. nauk, otv. red.; PADERIN, G.N.,
G.N., red.

[Cosmic rays and problems in cosmic physics transactions]
Kosmicheskie luchy i problemy kosmofiziki; trudy. Novosibirsk, Red.-
izd. otdel Sibirskogo otd-nia AN SSSR, 1965. 293 p.
(MIRA 18:7)

1. Vsesoyuznoye soveshchaniye po kosmofizicheskomu naprav-
leniyu issledovaniy kosmicheskikh luchey. 1st, Yakutsk, 1962.